FIG. 1A
(PRIOR ART)

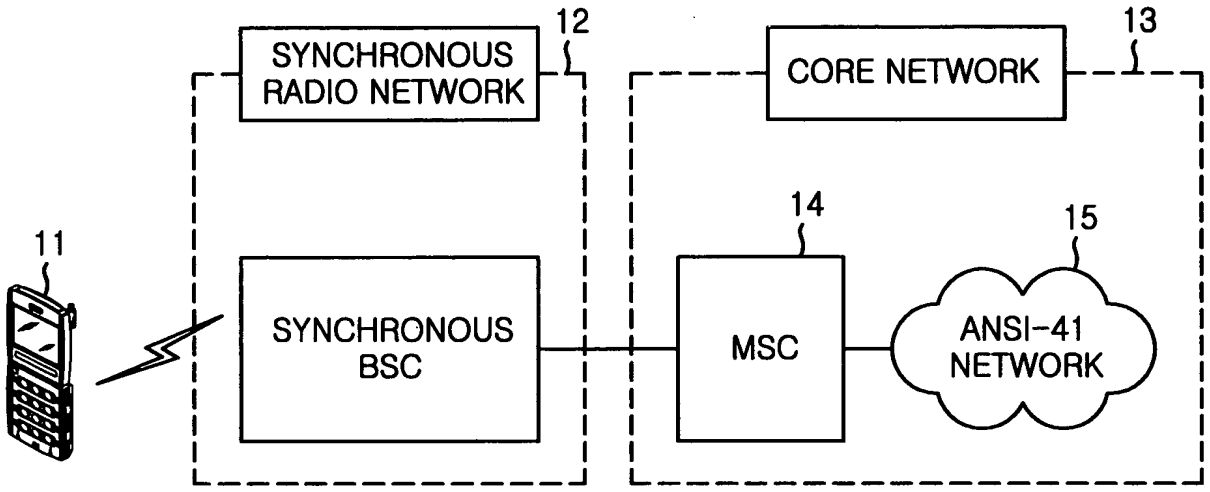


FIG. 1B
(PRIOR ART)

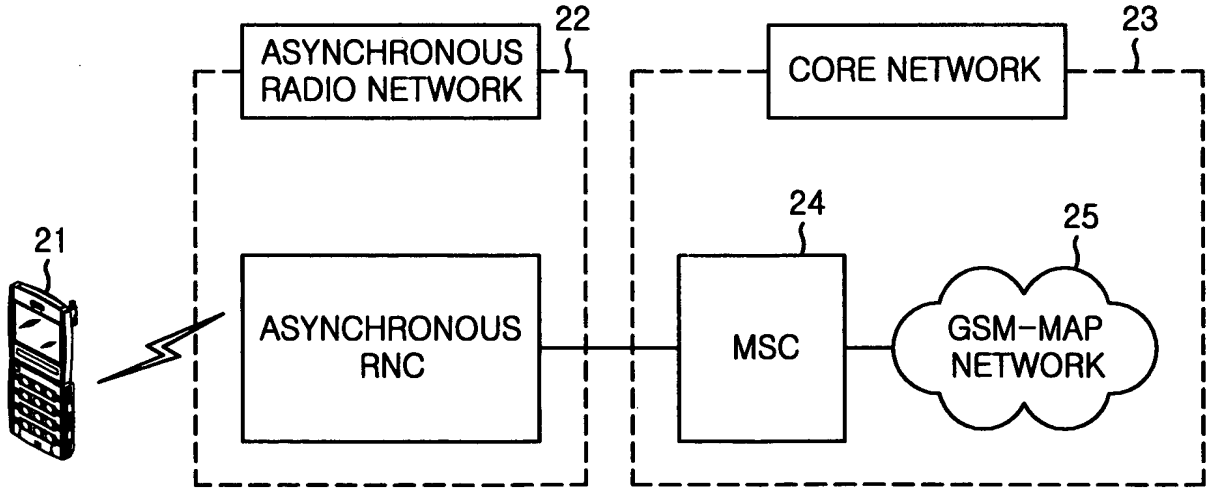


FIG. 4A

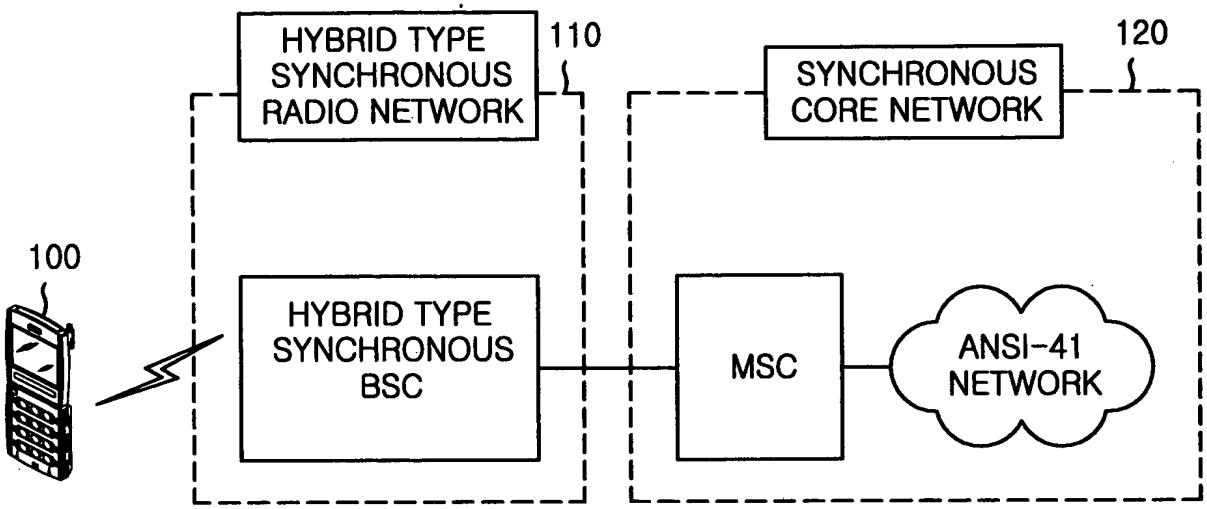

HYBRID TYPE SYNCHRONOUS RADIO NETWORK
110
SYNCHRONOUS CORE NETWORK
120
100
HYBRID TYPE SYNCHRONOUS BSC
MSC
ANSI-41 NETWORK

FIG. 4B

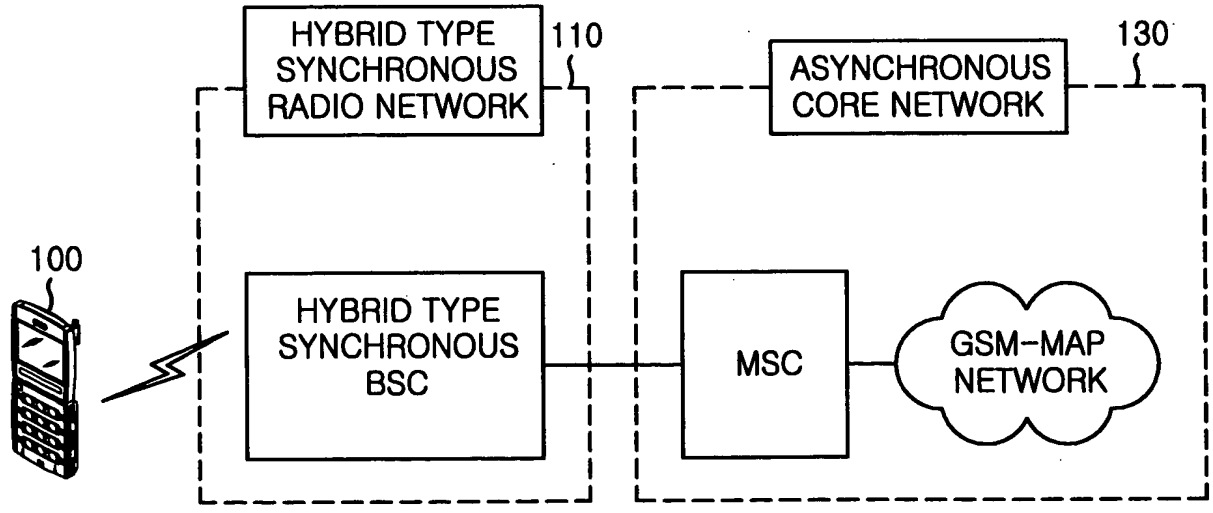

HYBRID TYPE SYNCHRONOUS RADIO NETWORK
110
ASYNCHRONOUS CORE NETWORK
130
100
HYBRID TYPE SYNCHRONOUS BSC
MSC
GSM-MAP NETWORK

FIG. 2A
(PRIOR ART)

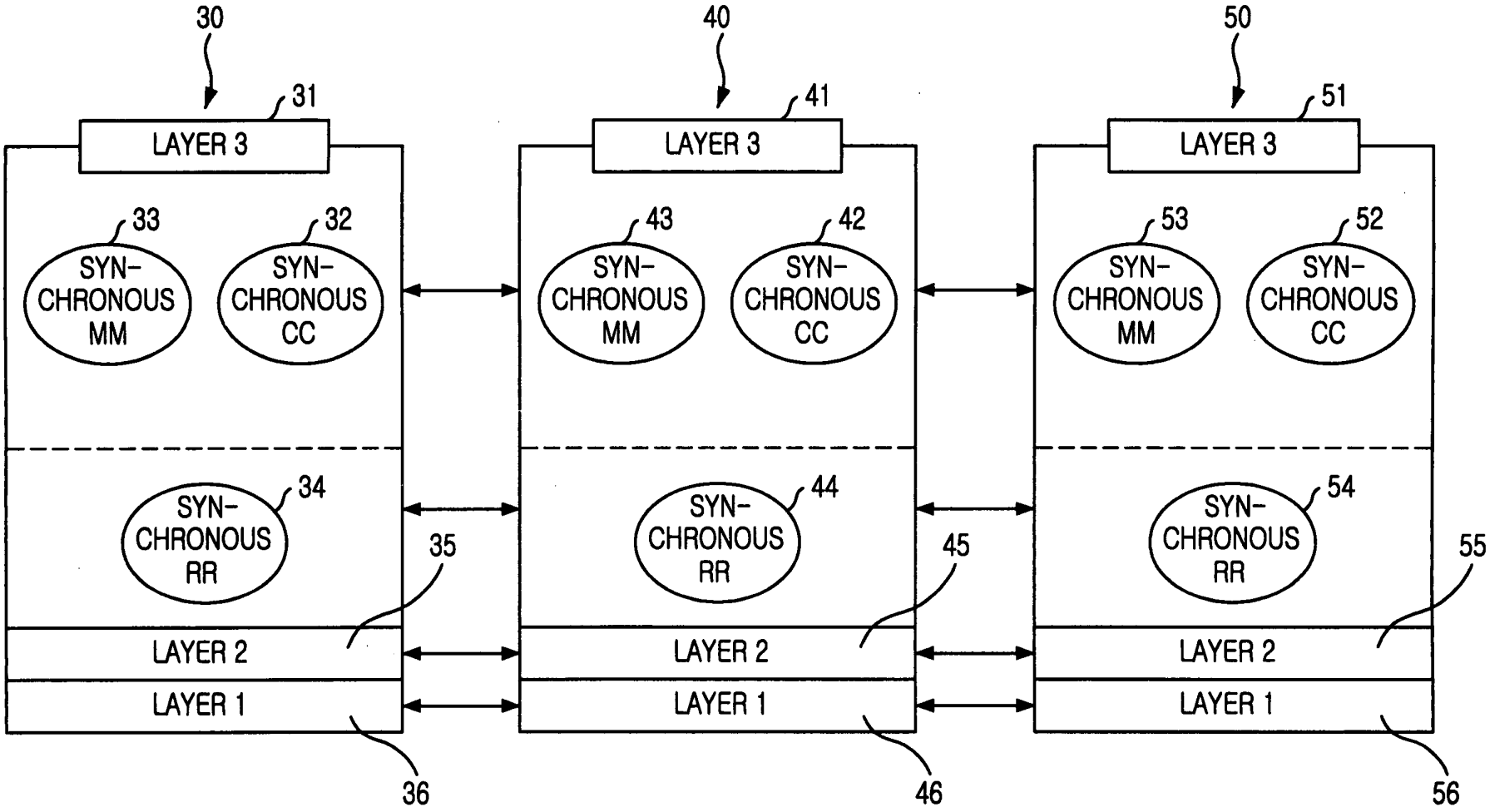


FIG. 2B
(PRIOR ART)

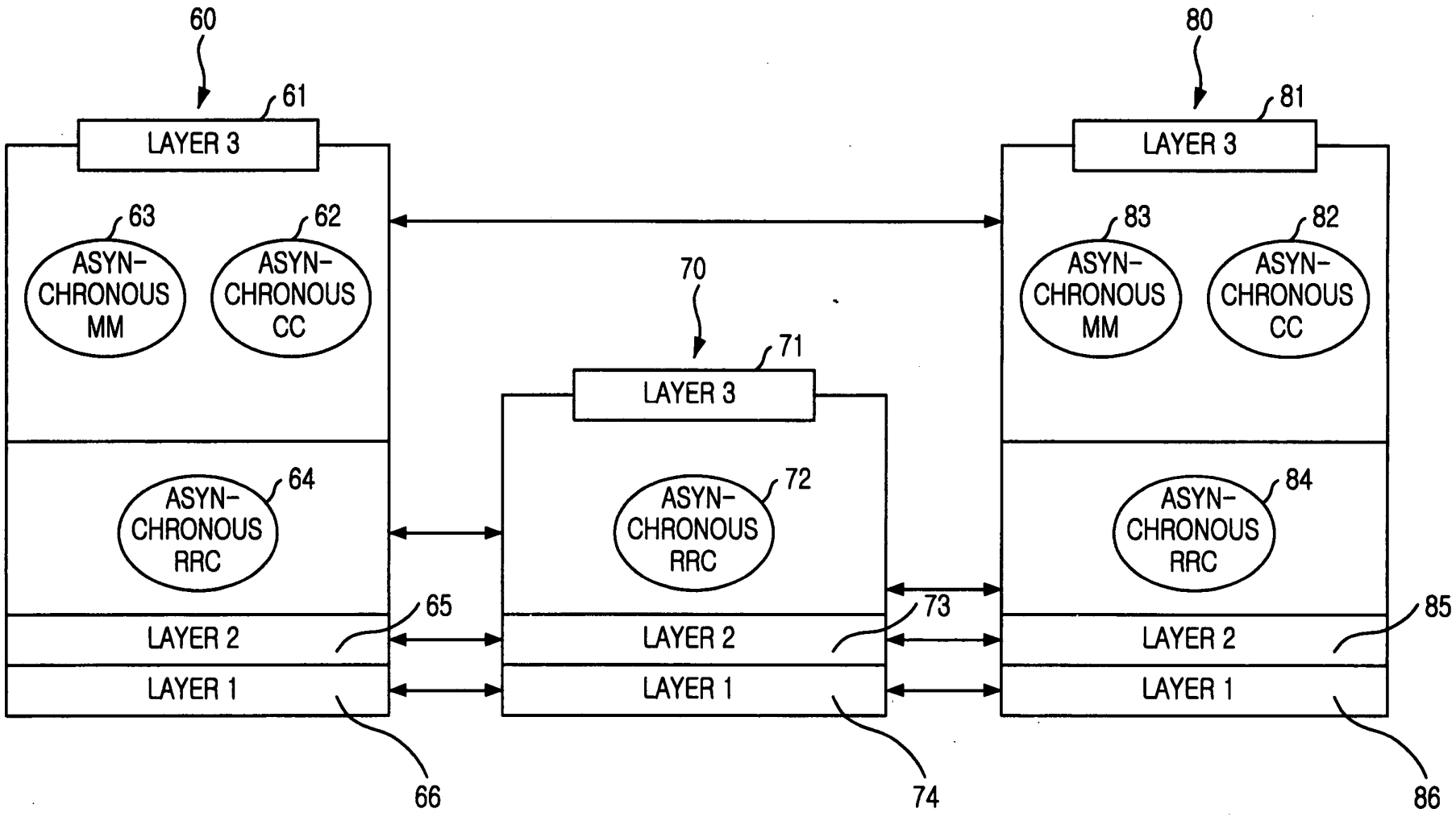


FIG. 3

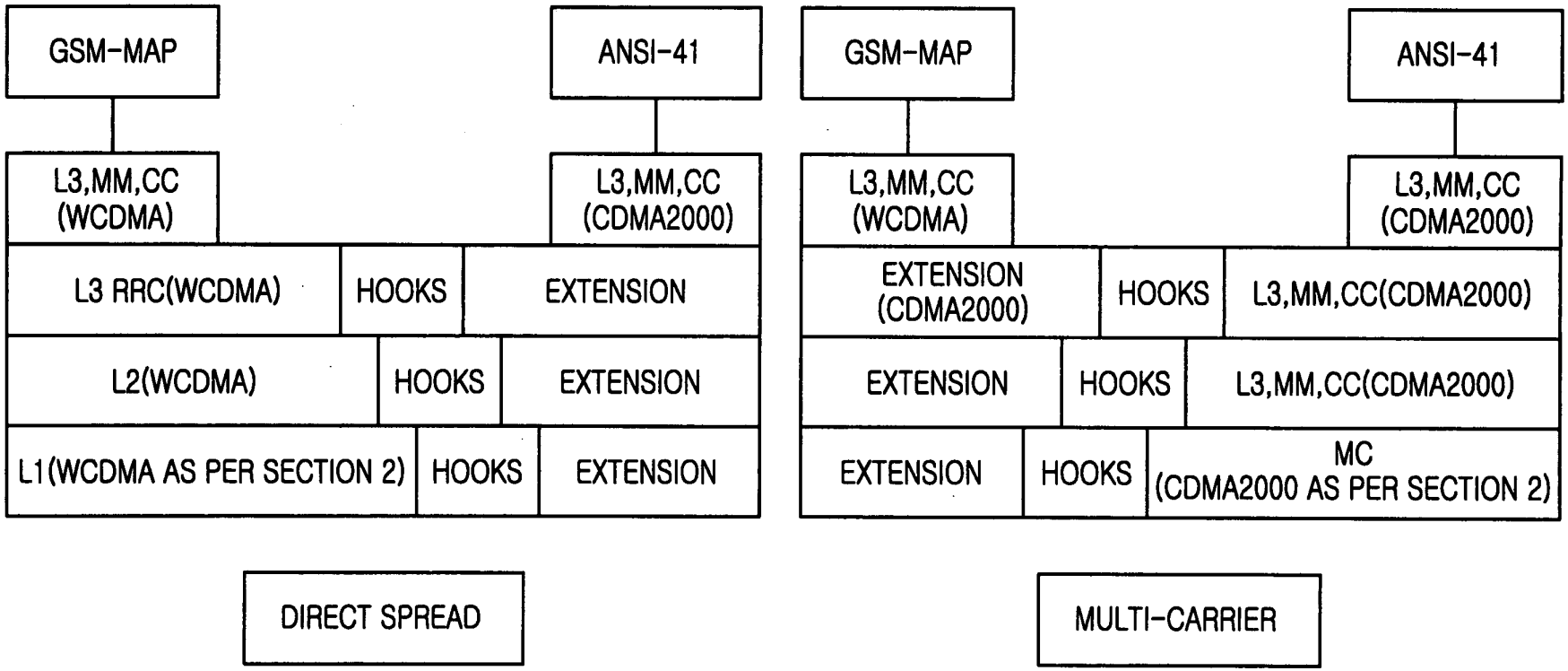

GSM-MAP
ANSI-41
L3,MM,CC (WCDMA)
L3,MM,CC (CDMA2000)
L3 RRC(WCDMA)
HOOKS
EXTENSION
L2(WCDMA)
HOOKS
EXTENSION
L1(WCDMA AS PER SECTION 2)
HOOKS
EXTENSION
DIRECT SPREAD
GSM-MAP
ANSI-41
L3,MM,CC (WCDMA)
L3,MM,CC (CDMA2000)
EXTENSION (CDMA2000)
HOOKS
L3,MM,CC(CDMA2000)
EXTENSION
HOOKS
L3,MM,CC(CDMA2000)
EXTENSION
HOOKS
MC (CDMA2000 AS PER SECTION 2)
MULTI-CARRIER

FIG. 5A

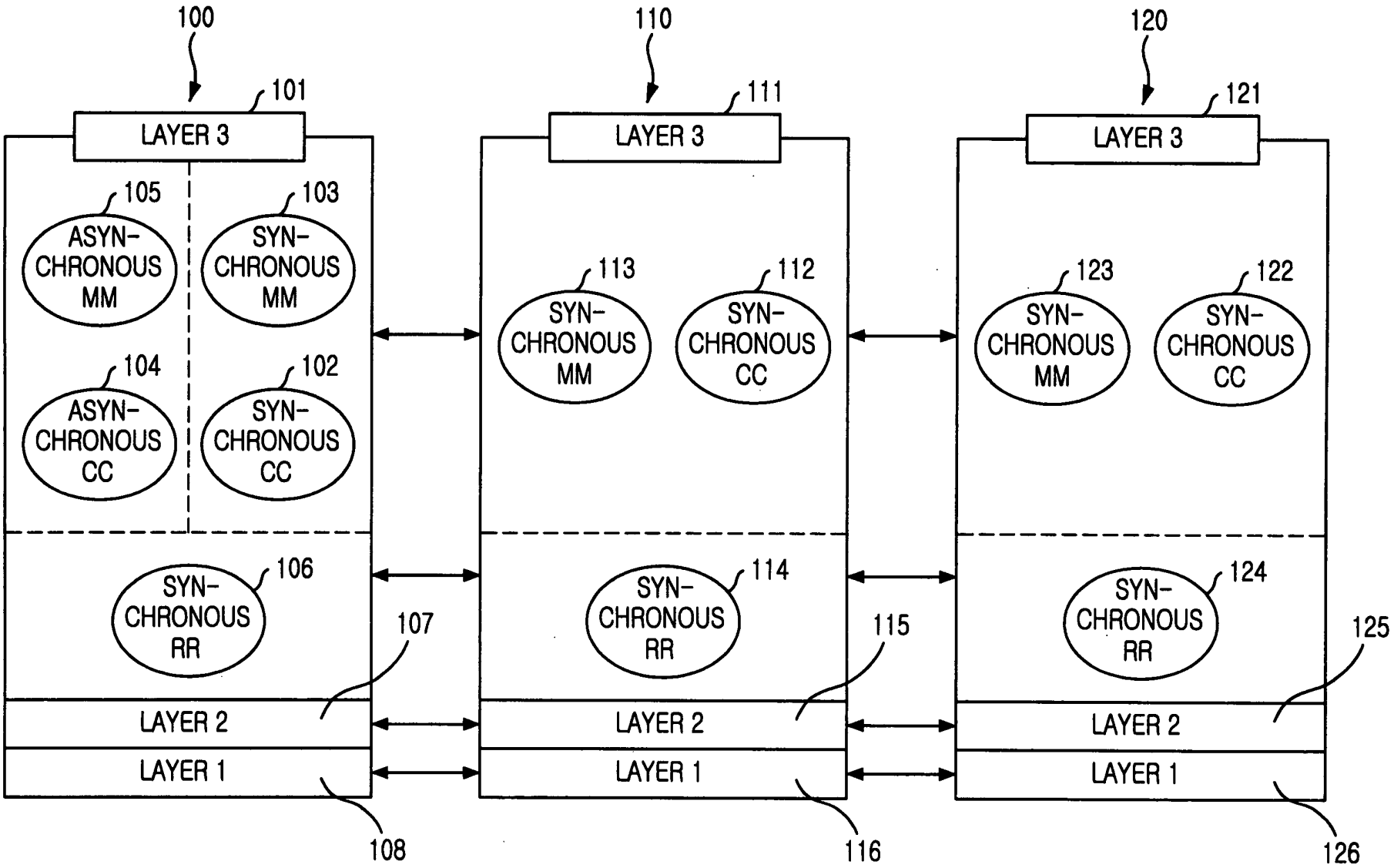

100
101
LAYER 3
105
ASYN-CHRONOUS MM
103
SYN-CHRONOUS MM
104
ASYN-CHRONOUS CC
102
SYN-CHRONOUS CC
106
SYN-CHRONOUS RR
107
LAYER 2
LAYER 1
108
110
111
LAYER 3
113
SYN-CHRONOUS MM
112
SYN-CHRONOUS CC
114
SYN-CHRONOUS RR
115
LAYER 2
LAYER 1
116
120
121
LAYER 3
123
SYN-CHRONOUS MM
122
SYN-CHRONOUS CC
124
SYN-CHRONOUS RR
125
LAYER 2
LAYER 1
126

FIG. 5B

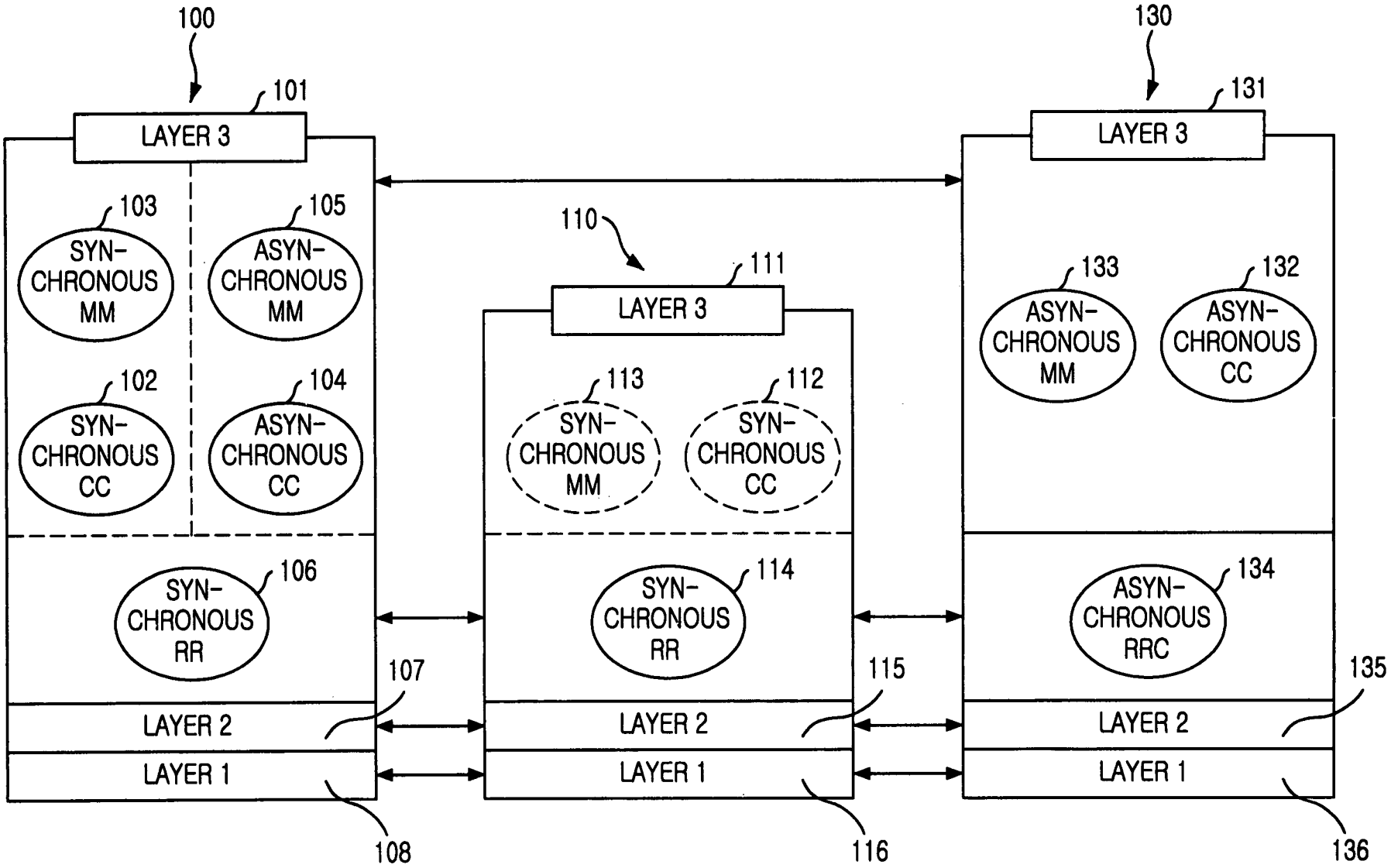

100
101
LAYER 3
103
SYN-CHRONOUS MM
105
ASYN-CHRONOUS MM
102
SYN-CHRONOUS CC
104
ASYN-CHRONOUS CC
106
SYN-CHRONOUS RR
107
LAYER 2
LAYER 1
108
110
111
LAYER 3
113
SYN-CHRONOUS MM
112
SYN-CHRONOUS CC
114
SYN-CHRONOUS RR
115
LAYER 2
LAYER 1
116
130
131
LAYER 3
133
ASYN-CHRONOUS MM
132
ASYN-CHRONOUS CC
134
ASYN-CHRONOUS RRC
135
LAYER 2
LAYER 1
136

FIG. 5C

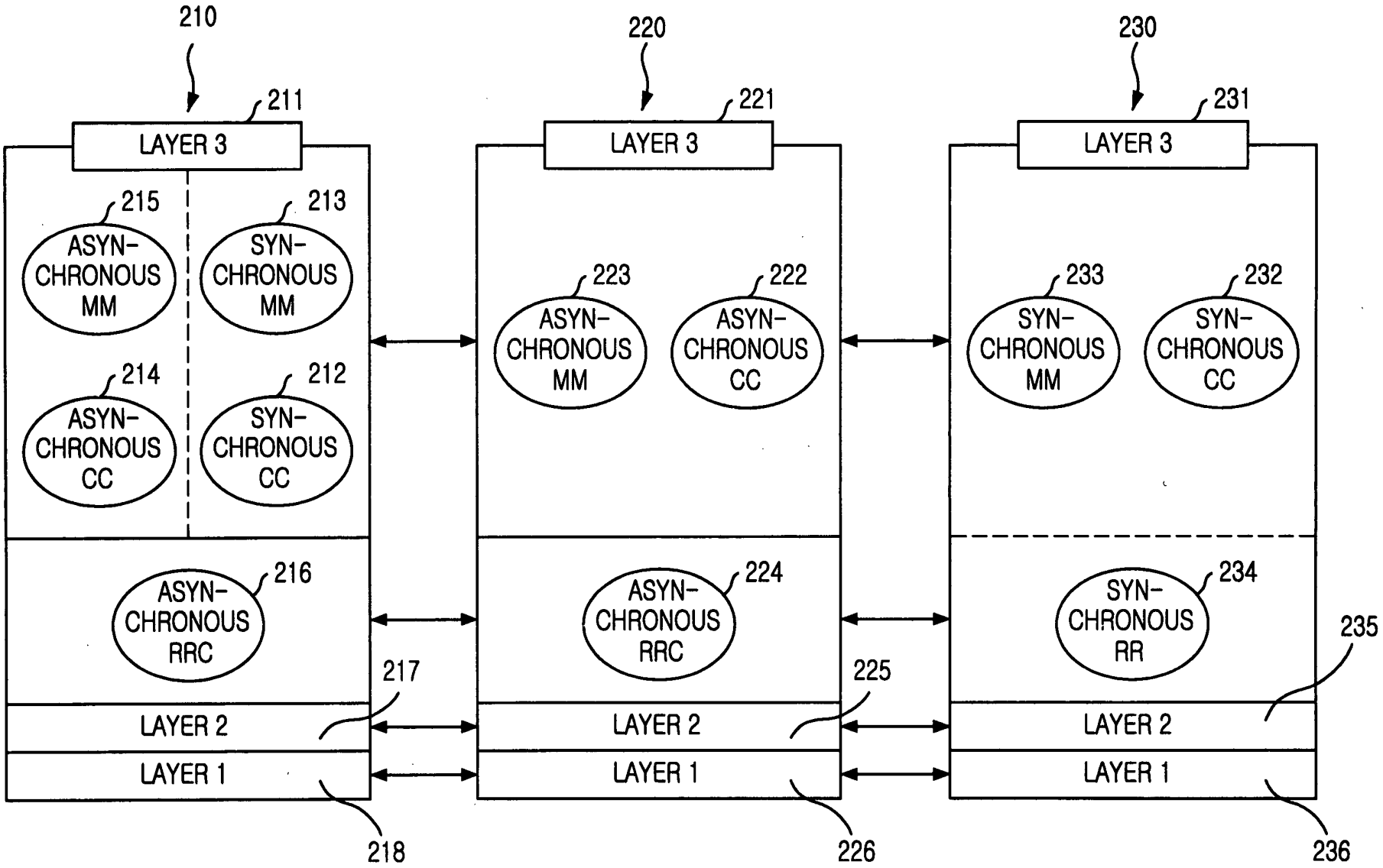

210
211
LAYER 3
215
ASYN-CHRONOUS MM
213
SYN-CHRONOUS MM
214
ASYN-CHRONOUS CC
212
SYN-CHRONOUS CC
216
ASYN-CHRONOUS RRC
217
LAYER 2
LAYER 1
218
220
221
LAYER 3
223
ASYN-CHRONOUS MM
222
ASYN-CHRONOUS CC
224
ASYN-CHRONOUS RRC
225
LAYER 2
LAYER 1
226
230
231
LAYER 3
233
SYN-CHRONOUS MM
232
SYN-CHRONOUS CC
234
SYN-CHRONOUS RR
235
LAYER 2
LAYER 1
236

FIG. 5D

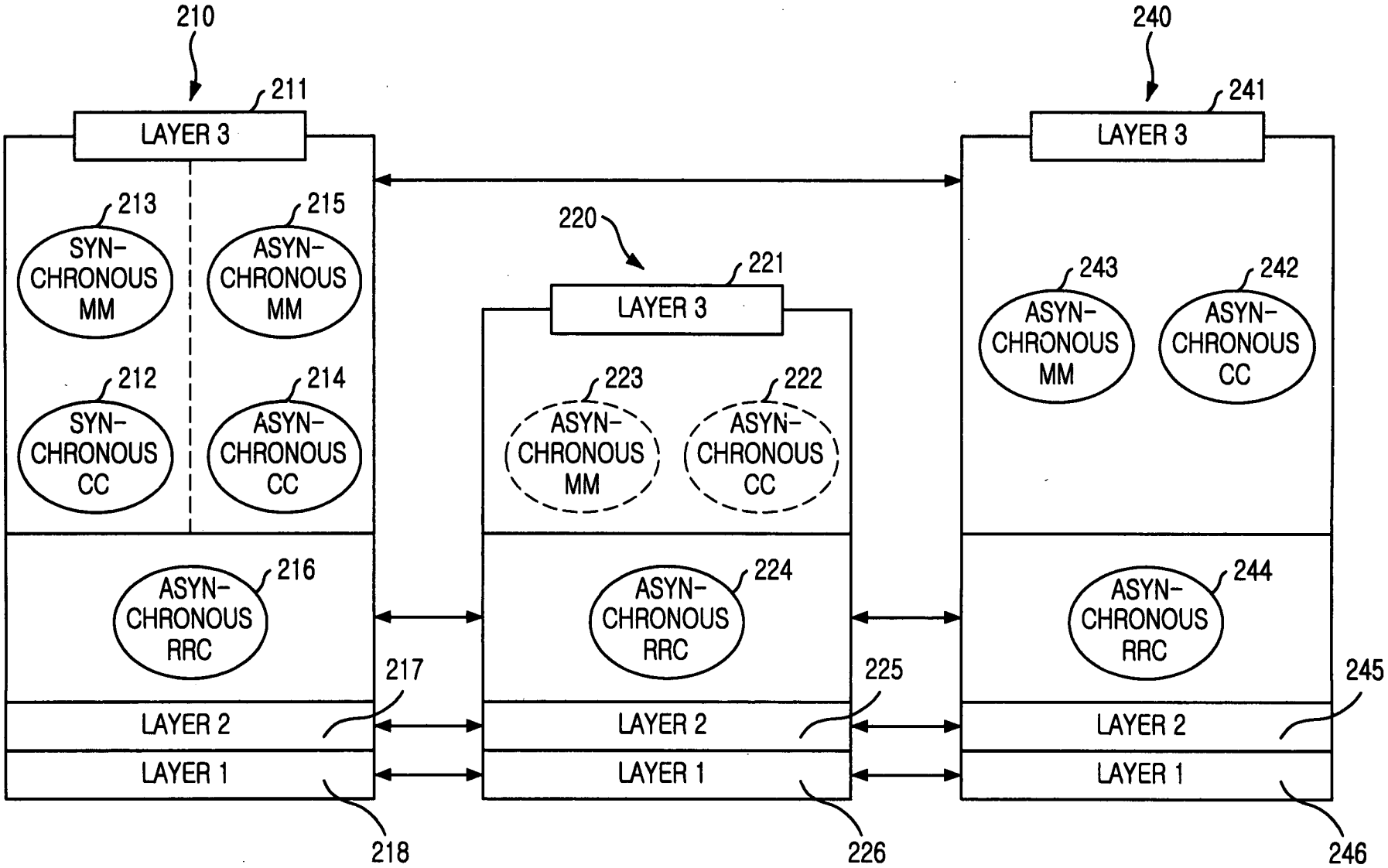

210
211
LAYER 3
213
SYN-CHRONOUS MM
215
ASYN-CHRONOUS MM
212
SYN-CHRONOUS CC
214
ASYN-CHRONOUS CC
216
ASYN-CHRONOUS RRC
217
LAYER 2
LAYER 1
218
220
221
LAYER 3
223
ASYN-CHRONOUS MM
222
ASYN-CHRONOUS CC
224
ASYN-CHRONOUS RRC
225
LAYER 2
LAYER 1
226
240
241
LAYER 3
243
ASYN-CHRONOUS MM
242
ASYN-CHRONOUS CC
244
ASYN-CHRONOUS RRC
245
LAYER 2
LAYER 1
246

FIG. 4C

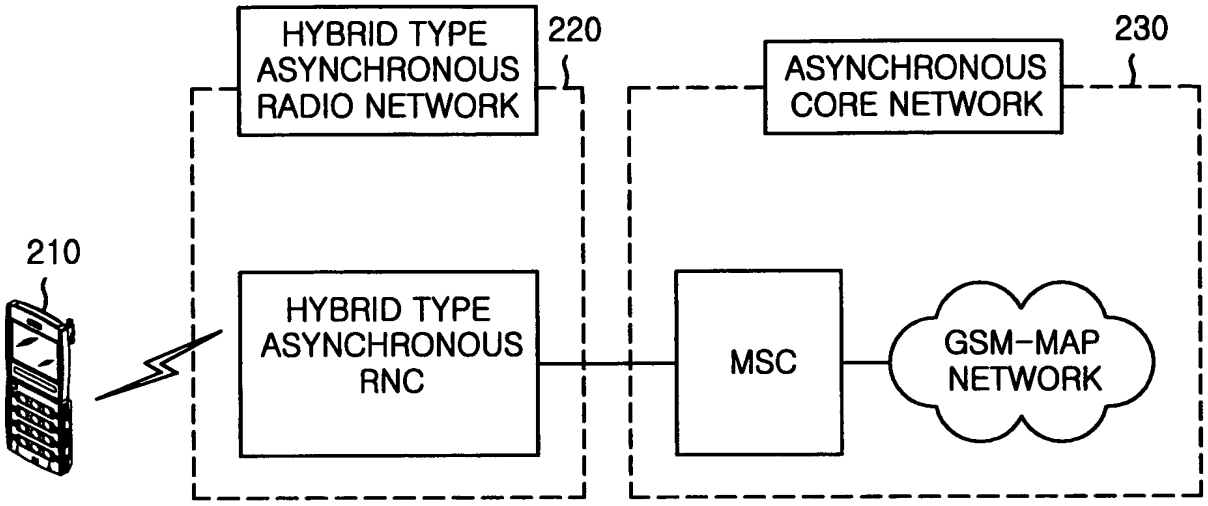

HYBRID TYPE ASYNCHRONOUS RADIO NETWORK
220
ASYNCHRONOUS CORE NETWORK
230
210
HYBRID TYPE ASYNCHRONOUS RNC
MSC
GSM-MAP NETWORK

FIG. 4D

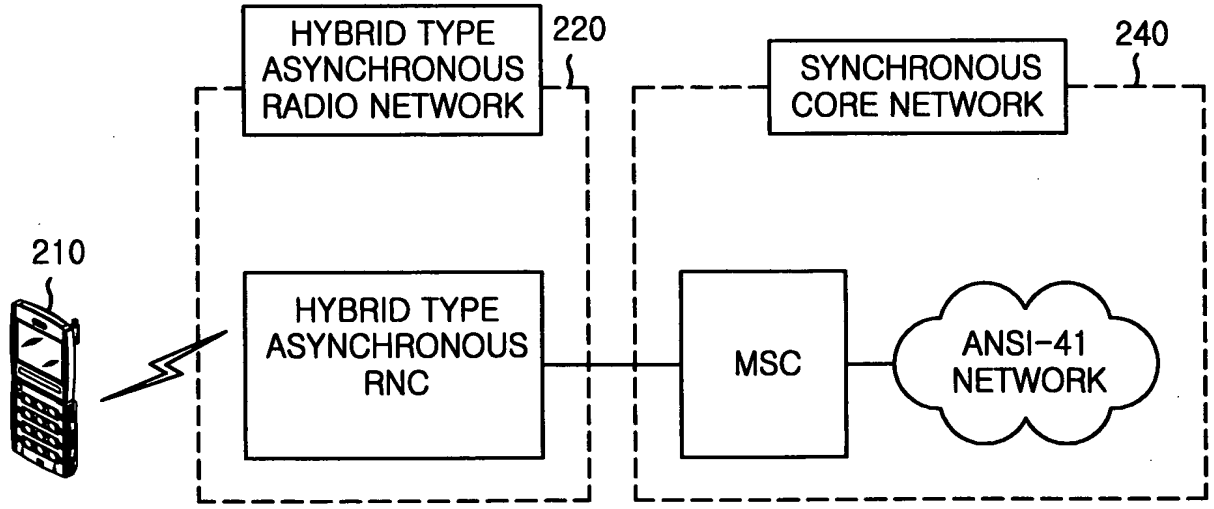

HYBRID TYPE ASYNCHRONOUS RADIO NETWORK
220
SYNCHRONOUS CORE NETWORK
240
210
HYBRID TYPE ASYNCHRONOUS RNC
MSC
ANSI-41 NETWORK

FIG. 6
(PRIOR ART)

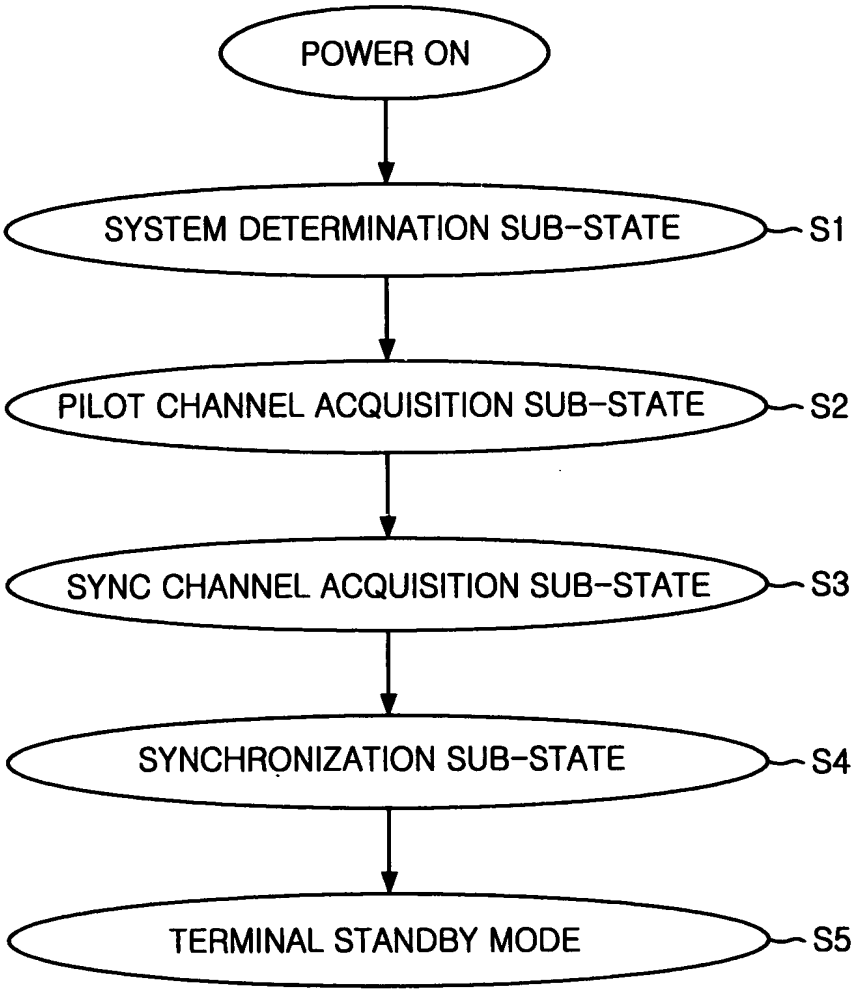


FIG. 7A
(PRIOR ART)

PROTOCOL REVISION LEVEL (8 BITS)
MINIMUM PROTOCOL REVISION LEVEL (8 BITS)
SYSTEM IDENTIFICATION (15 BITS)
NETWORK IDENTIFICATION (16 BITS)
PILOT PN SEQUENCE OFFSET INDEX (9 BITS)
LONG CODE STATE (42 BITS)
SYSTEM TIME (36 BITS)
THE NUMBER OF LEAP SECONDS THAT HAVE OCCURRED SINCE THE START OF SYSTEM TIME (8 BITS)
OFFSET OF LOCAL TIME FROM SYSTEM TIME (6 BITS)
DAYLIGHT SAVINGS TIME INDICATOR (1 BIT)
PAGING CHANNEL DATA RATE (2 BITS)
FREQUENCY ASSIGNMENT (11 BITS)
EXTENDED FREQUENCY ASSIGNMENT (11 BITS)
ORTHOGONAL TRANSMIT DIVERSITY MODE (2 BITS)

FIG. 7B
(PRIOR ART)

INFORMATION ELEMENT CATEGORY	INFORMATION ELEMENTS	REFER-ENCE	TYPE	NOTE	
	MESSAGE TYPE		M		
CN INFORMATION ELEMENTS					
	PLMN IDENTITY		M		
	CN DOMAIN IDENTITY		M		FOR EACH CORE NETWORK DOMAIN.
	NAS SYSTEM INFORMATION		M		INFORMATION MUST BE INCLUDED FOR AT LEAST ONE CORE NETWORK DOMAIN TYPE.
UTRAN MOBILITY INFORMATION ELEMENTS	URA IDENTITY		M		FOR EACH URA
	INFORMATION FOR PERIDOIC CELL AND URA UPDATE		M		NOTE : NOT FOR EACH URA ANY MORE
	CELL IDENTITY		M	THE NECESSITY AND USAGE OF CELL IDENTITY IS FFS.	
	CELL SELECTION AND RE-SELECTION INFO		M		
⋮	⋮	⋮	⋮	⋮	

FIG. 8A

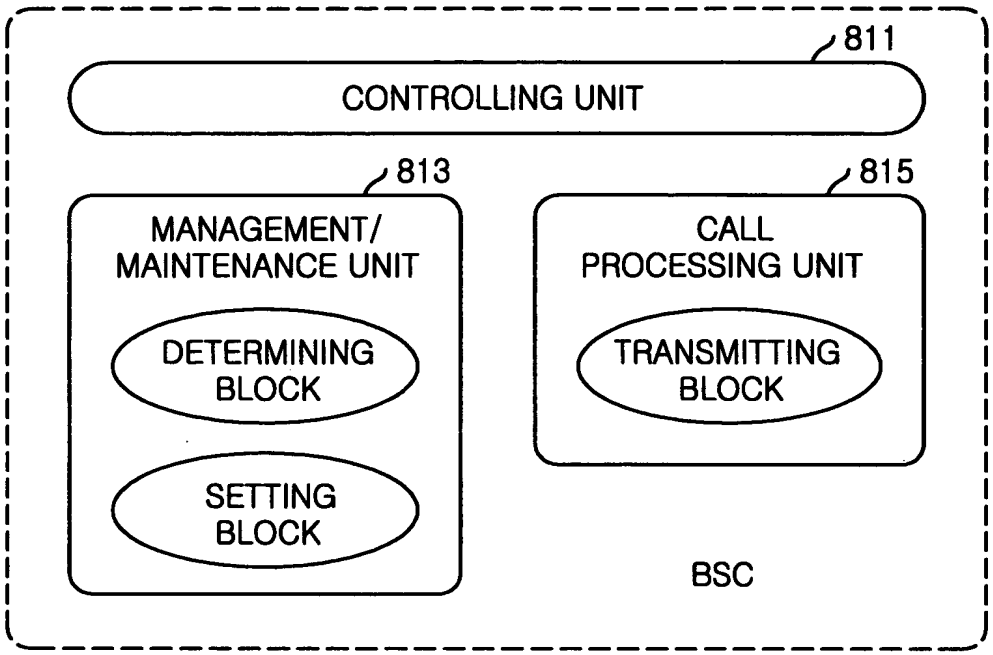

811
CONTROLLING UNIT
813
MANAGEMENT/
MAINTENANCE UNIT
DETERMINING
BLOCK
SETTING
BLOCK
815
CALL
PROCESSING UNIT
TRANSMITTING
BLOCK
BSC

FIG. 8B

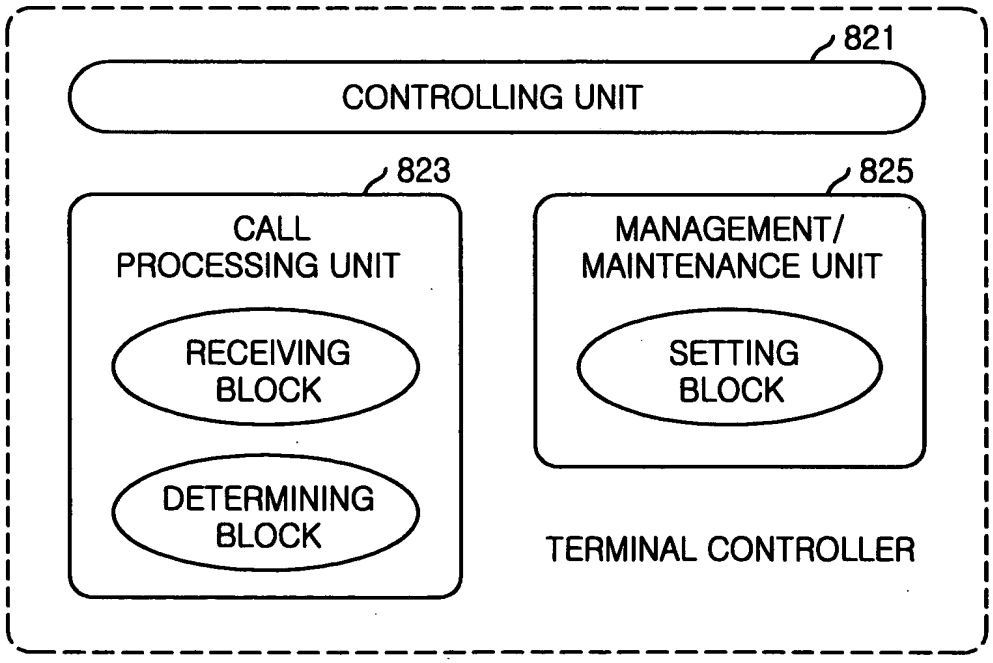

821
CONTROLLING UNIT
823
CALL
PROCESSING UNIT
RECEIVING
BLOCK
DETERMINING
BLOCK
825
MANAGEMENT/
MAINTENANCE UNIT
SETTING
BLOCK
TERMINAL CONTROLLER

FIG. 9A

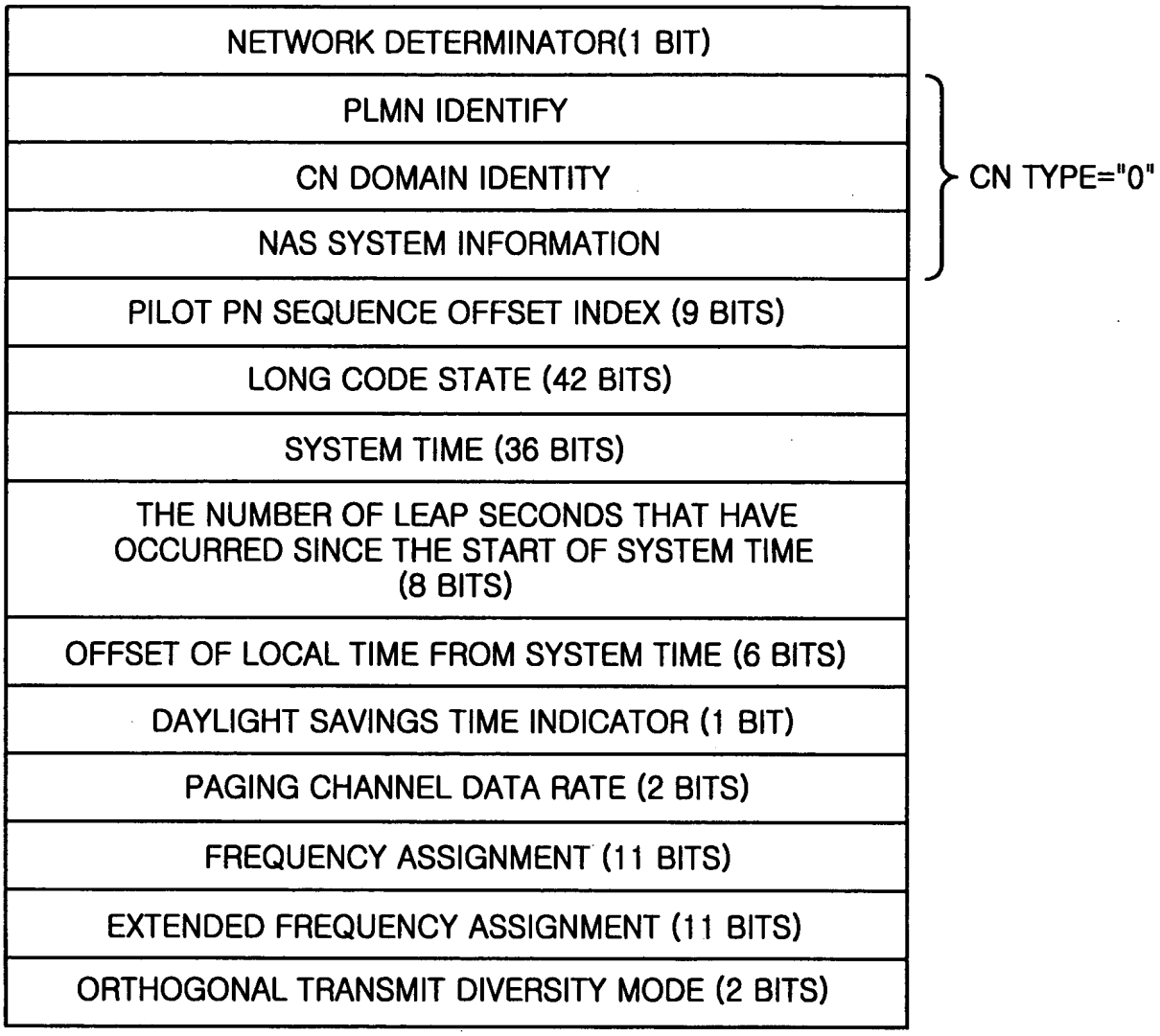

NETWORK DETERMINATOR(1 BIT)
PLMN IDENTIFY
CN DOMAIN IDENTITY
NAS SYSTEM INFORMATION
CN TYPE="0"
PILOT PN SEQUENCE OFFSET INDEX (9 BITS)
LONG CODE STATE (42 BITS)
SYSTEM TIME (36 BITS)
THE NUMBER OF LEAP SECONDS THAT HAVE OCCURRED SINCE THE START OF SYSTEM TIME (8 BITS)
OFFSET OF LOCAL TIME FROM SYSTEM TIME (6 BITS)
DAYLIGHT SAVINGS TIME INDICATOR (1 BIT)
PAGING CHANNEL DATA RATE (2 BITS)
FREQUENCY ASSIGNMENT (11 BITS)
EXTENDED FREQUENCY ASSIGNMENT (11 BITS)
ORTHOGONAL TRANSMIT DIVERSITY MODE (2 BITS)

FIG. 9B

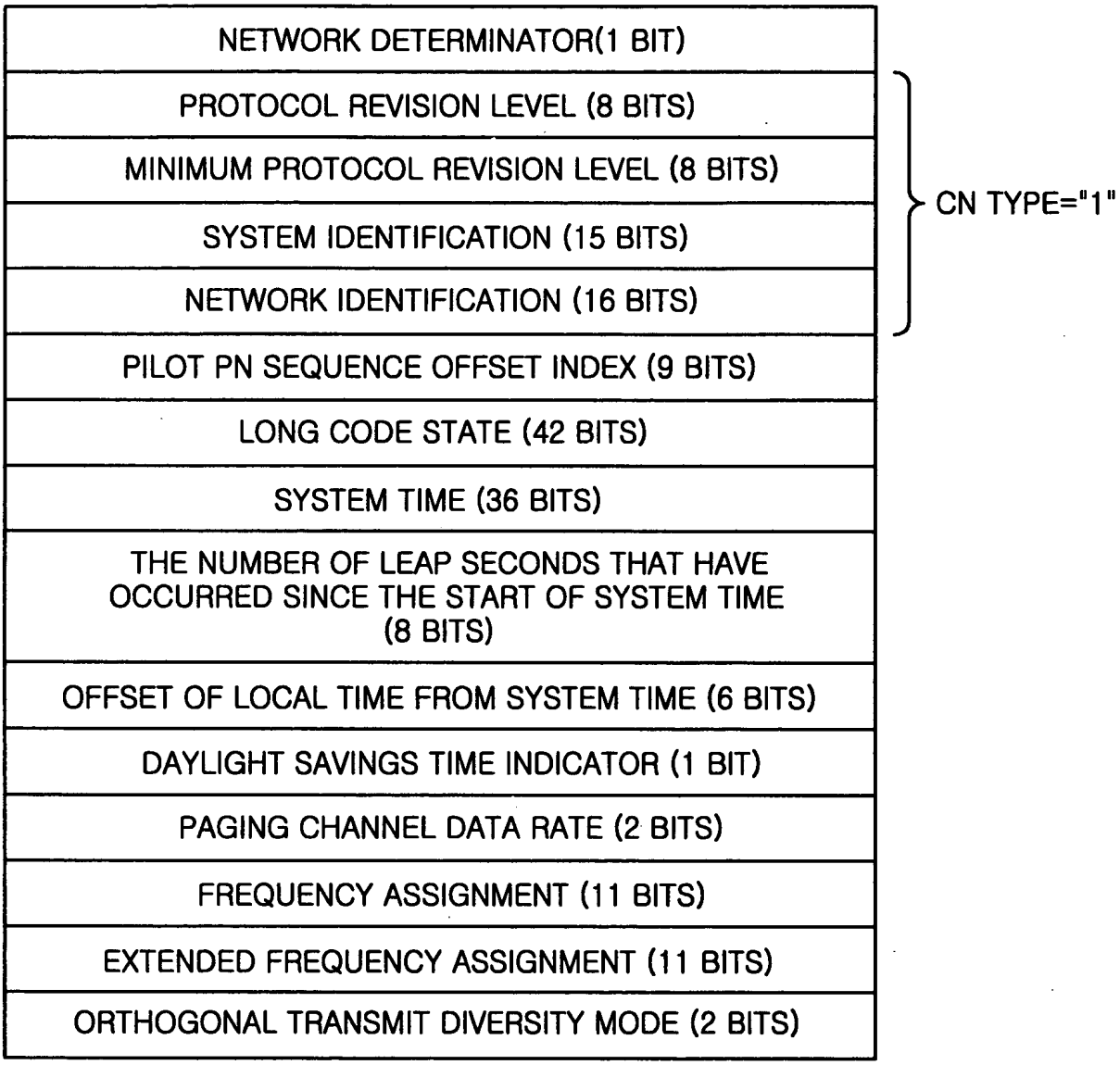

NETWORK DETERMINATOR(1 BIT)
PROTOCOL REVISION LEVEL (8 BITS)
MINIMUM PROTOCOL REVISION LEVEL (8 BITS)
SYSTEM IDENTIFICATION (15 BITS)
NETWORK IDENTIFICATION (16 BITS)
CN TYPE="1"
PILOT PN SEQUENCE OFFSET INDEX (9 BITS)
LONG CODE STATE (42 BITS)
SYSTEM TIME (36 BITS)
THE NUMBER OF LEAP SECONDS THAT HAVE OCCURRED SINCE THE START OF SYSTEM TIME (8 BITS)
OFFSET OF LOCAL TIME FROM SYSTEM TIME (6 BITS)
DAYLIGHT SAVINGS TIME INDICATOR (1 BIT)
PAGING CHANNEL DATA RATE (2 BITS)
FREQUENCY ASSIGNMENT (11 BITS)
EXTENDED FREQUENCY ASSIGNMENT (11 BITS)
ORTHOGONAL TRANSMIT DIVERSITY MODE (2 BITS)

FIG. 10A

INFORMATION ELEMENT	PRES-ENCE	MULTI	IE TYPE AND REFERENCE	SEMANTICS DESCRIPTION
OTHER INFORMATION ELEMENTS				
MIB VALUE TAG	M			
CHOICE MODE				
>TDD				
>>SFNPRIME	M		INTEGER (0,2..4094)	SFN=SFNPRIME(FOR FRIST 10ms FRAME OF 20ms TTI), SFN=SFNPRIME+1(FOR LAST 10ms FRAME OF 20ms TTI),
NETWORK CAPABILITY EXTENSION INDICATION				A VALUE OF "FALSE" INDICATES THAT THE INITIAL UE CAPABILITY IS INTERPRETED ACCORDING TO "RELEASE 99(FIRST RELEASE)". IF THE VALUE IS SET TO "TRUE", A NEW DEFINITION GIVEN IN A FUTURE RELEASE IS ADDED TO THIS INFORMATION ELEMENT.
CAPABILITY EXTENSION INFO	C-IND			NOTE 1
REFERENCES TO OTHER SYSTEM INFORMATION BLOCKS		1.. <MAX SYS INFO BLOCK COUNT>		
>SCHEDULING INFORMATION	M			
CN INFORMATION ELEMENTS				
CN TYPE	M		GSM-MAP	
PLMN IDENTITY	C-GSM			

FIG. 10B

CONDITION	EXPLANATION
GSM	THIS INFORMATION ELEMENT SHALL BE PRESENT IN CASE(CN TYPE == "GSM-MAP") OR (CN TYPE == "GSM-MAP AND ANSI-41")
ANSI	THIS INFORMATION ELEMENT SHALL BE PRESENT IN CASE(CN TYPE == "ANSI-41") OR (CN TYPE == "GSM-MAP AND ANSI-41")

FIG. 10C

INFORMATION ELEMENT	PRES-ENCE	MULTI	IE TYPE AND REFERENCE	SEMANTICS DESCRIPTION
OTHER INFORMATION ELEMENTS				
MIB VALUE TAG	M			
CHOICE MODE				
>TDD				
>>SFNPRIME	M		INTEGER (0,2..4094)	SFN=SFNPRIME(FOR FRIST 10ms FRAME OF 20ms TTI), SFN=SFNPRIME+1(FOR LAST 10ms FRAME OF 20ms TTI),
NETWORK CAPABILITY EXTENSION INDICATION				A VALUE OF "FALSE" INDICATES THAT THE INITIAL UE CAPABILITY IS INTERPRETED ACCORDING TO "RELEASE 99(FIRST RELEASE)". IF THE VALUE IS SET TO "TRUE", A NEW DEFINITION GIVEN IN A FUTURE RELEASE IS ADDED TO THIS INFORMATION ELEMENT.
CAPABILITY EXTENSION INFO	C-IND			NOTE 1
REFERENCES TO OTHER SYSTEM INFORMATION BLOCKS		1.. <MAX SYS INFO BLOCK COUNT>		
>SCHEDULING INFORMATION	M			
CN INFORMATION ELEMENTS				
CN TYPE	M		ANSI-41	
ANSI-41 INFORMATION ELEMENTS	C-ANSI			
>P_PEV	M			
>MIN_P_REV	M			
>SID	M			
>NID	M			

FIG. 10D

CONDITION	EXPLANATION
GSM	THIS INFORMATION ELEMENT SHALL BE PRESENT IN CASE(CN TYPE == "GSM-MAP") OR (CN TYPE == "GSM-MAP AND ANSI-41")
ANSI	THIS INFORMATION ELEMENT SHALL BE PRESENT IN CASE(CN TYPE == "ANSI-41") OR (CN TYPE == "GSM-MAP AND ANSI-41")

FIG. 11A

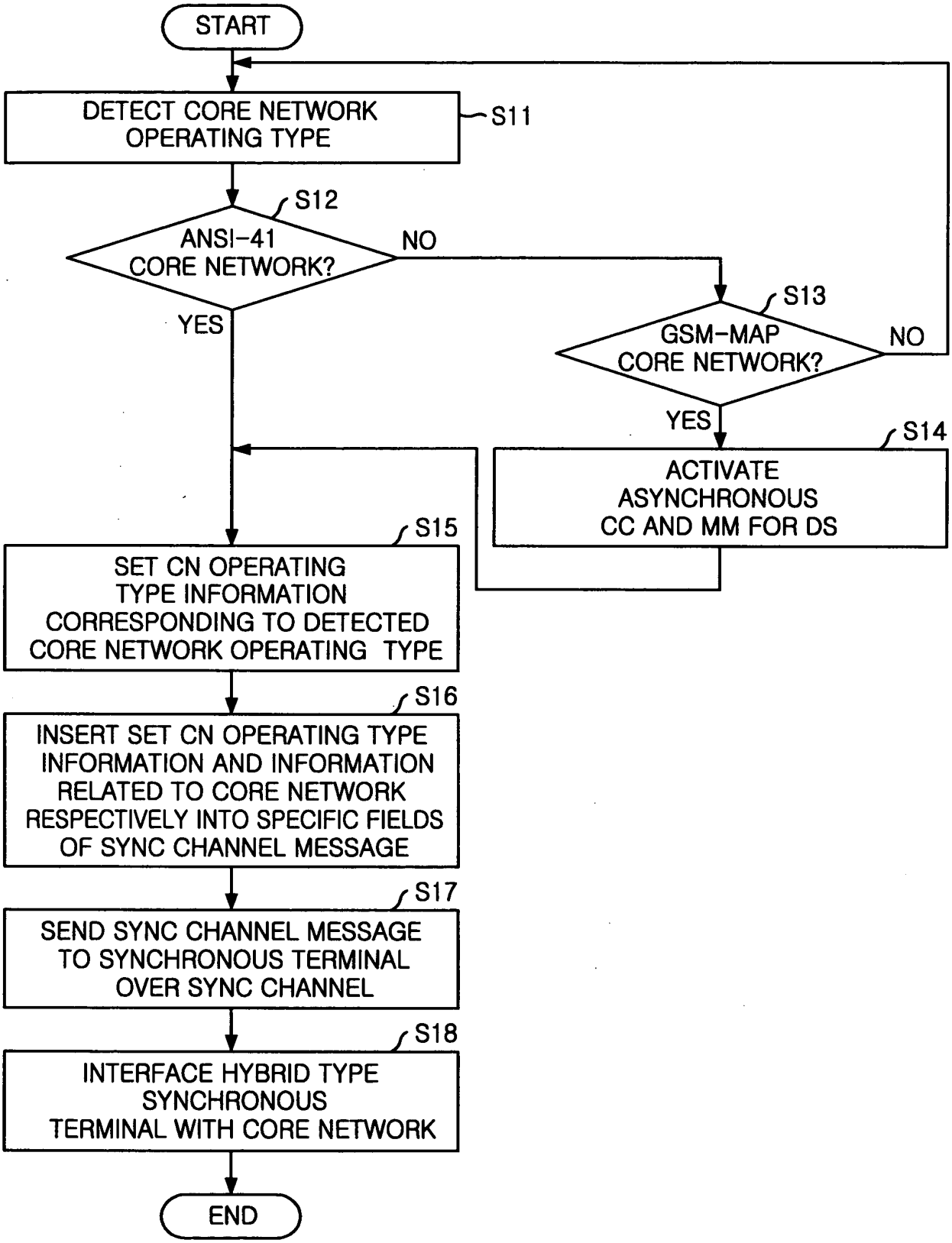

START
DETECT CORE NETWORK OPERATING TYPE
S11
S12
ANSI-41 CORE NETWORK?
NO
YES
S13
GSM-MAP CORE NETWORK?
NO
YES
S14
ACTIVATE ASYNCHRONOUS CC AND MM FOR DS
S15
SET CN OPERATING TYPE INFORMATION CORRESPONDING TO DETECTED CORE NETWORK OPERATING TYPE
S16
INSERT SET CN OPERATING TYPE INFORMATION AND INFORMATION RELATED TO CORE NETWORK RESPECTIVELY INTO SPECIFIC FIELDS OF SYNC CHANNEL MESSAGE
S17
SEND SYNC CHANNEL MESSAGE TO SYNCHRONOUS TERMINAL OVER SYNC CHANNEL
S18
INTERFACE HYBRID TYPE SYNCHRONOUS TERMINAL WITH CORE NETWORK
END

FIG. 11B

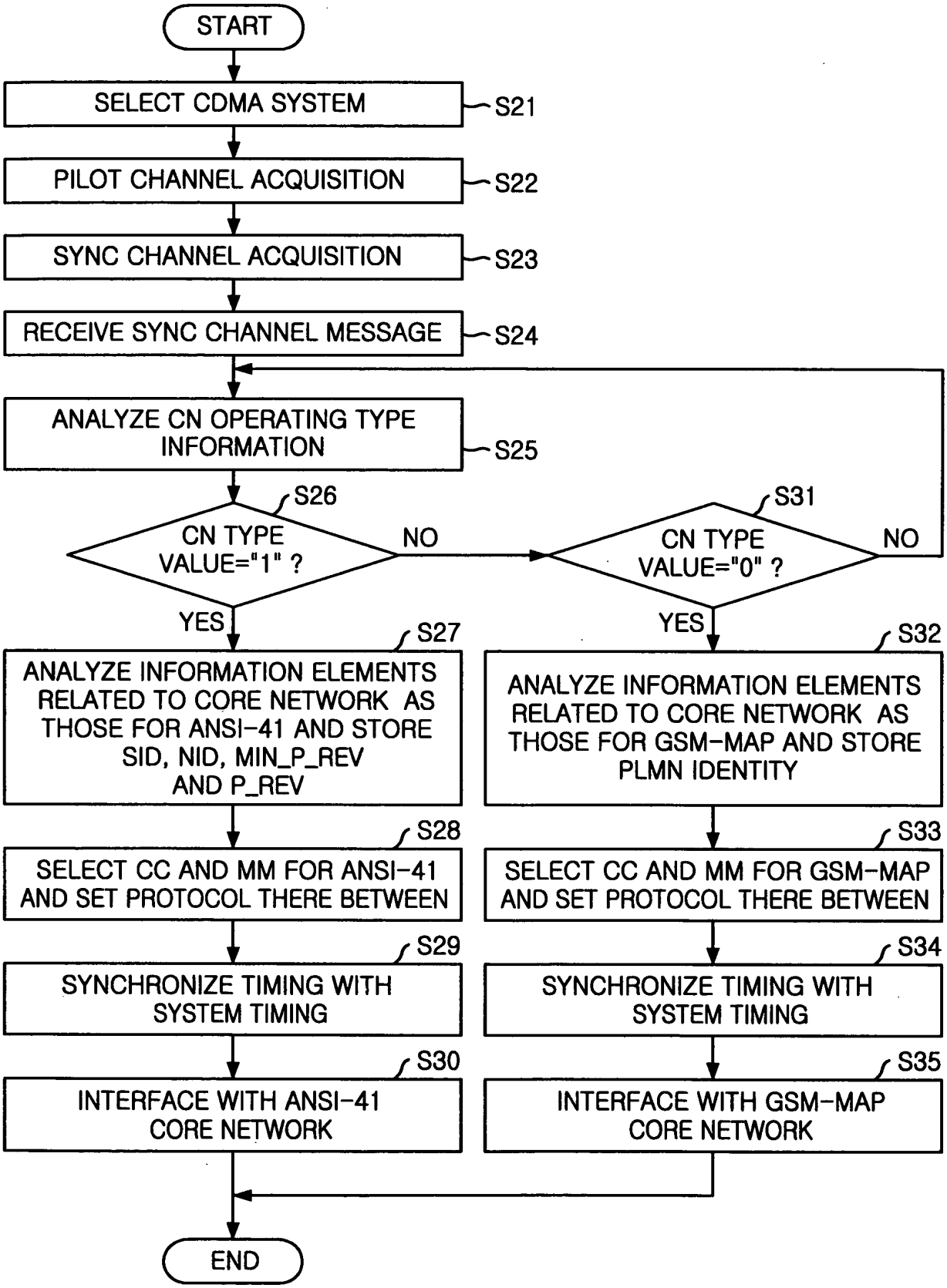

START
SELECT CDMA SYSTEM
S21
PILOT CHANNEL ACQUISITION
S22
SYNC CHANNEL ACQUISITION
S23
RECEIVE SYNC CHANNEL MESSAGE
S24
ANALYZE CN OPERATING TYPE INFORMATION
S25
S26
CN TYPE VALUE="1" ?
NO
YES
S31
CN TYPE VALUE="0" ?
NO
YES
S27
ANALYZE INFORMATION ELEMENTS RELATED TO CORE NETWORK AS THOSE FOR ANSI-41 AND STORE SID, NID, MIN_P_REV AND P_REV
S32
ANALYZE INFORMATION ELEMENTS RELATED TO CORE NETWORK AS THOSE FOR GSM-MAP AND STORE PLMN IDENTITY
S28
SELECT CC AND MM FOR ANSI-41 AND SET PROTOCOL THERE BETWEEN
S33
SELECT CC AND MM FOR GSM-MAP AND SET PROTOCOL THERE BETWEEN
S29
SYNCHRONIZE TIMING WITH SYSTEM TIMING
S34
SYNCHRONIZE TIMING WITH SYSTEM TIMING
S30
INTERFACE WITH ANSI-41 CORE NETWORK
S35
INTERFACE WITH GSM-MAP CORE NETWORK
END

FIG. 12A

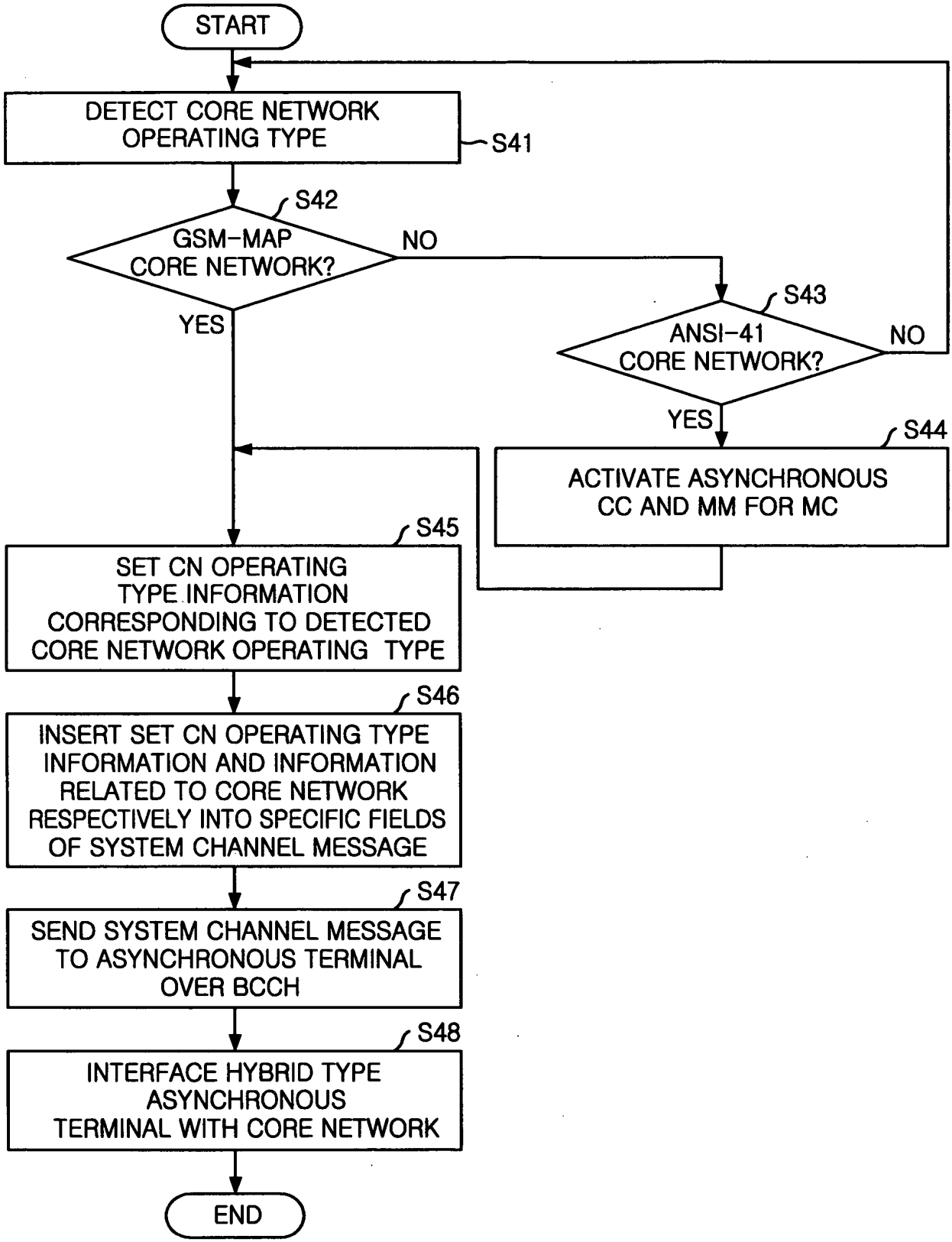
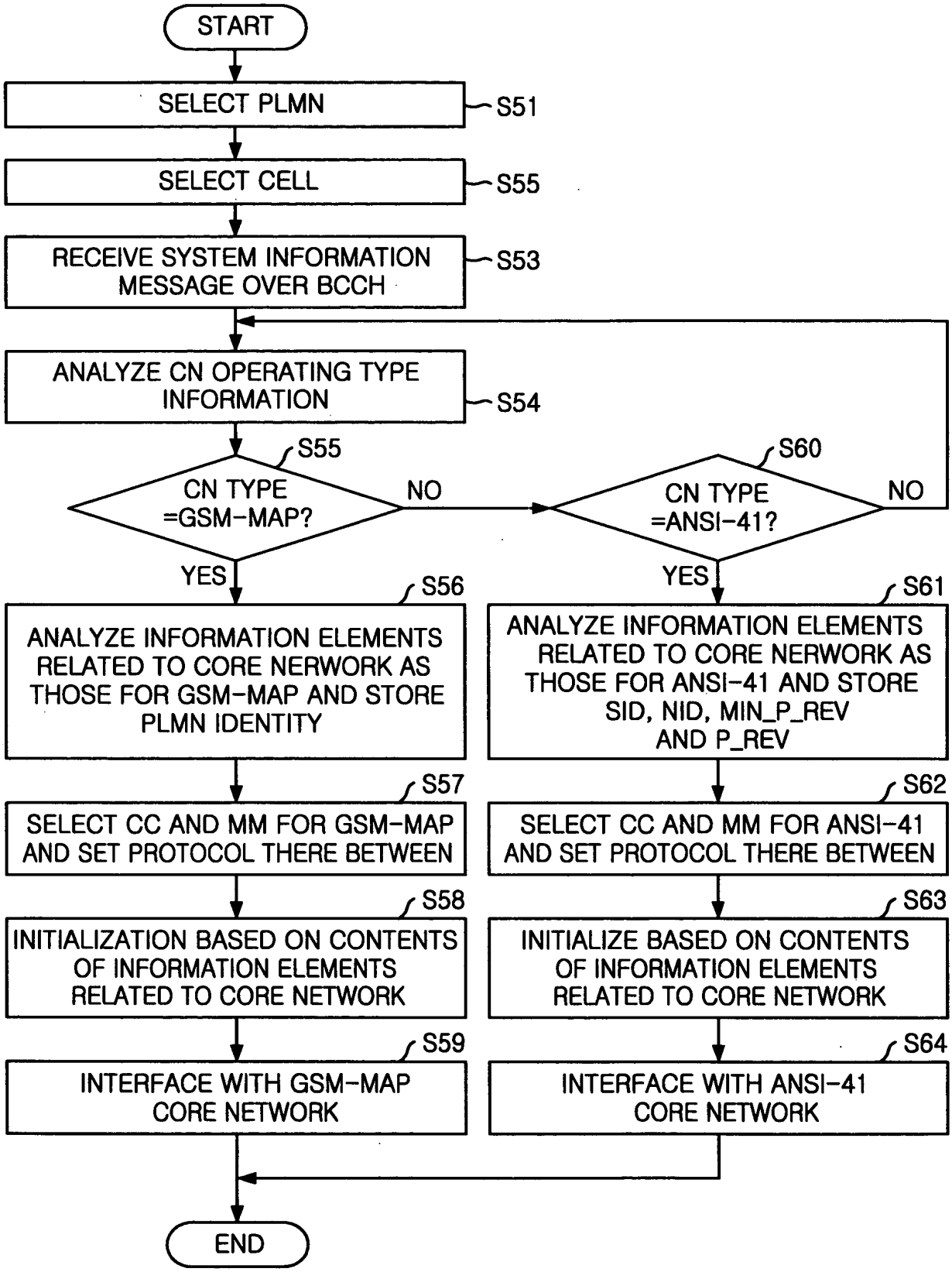

START
DETECT CORE NETWORK OPERATING TYPE
S41
S42
GSM-MAP CORE NETWORK?
NO
YES
S43
ANSI-41 CORE NETWORK?
NO
YES
S44
ACTIVATE ASYNCHRONOUS CC AND MM FOR MC
S45
SET CN OPERATING TYPE INFORMATION CORRESPONDING TO DETECTED CORE NETWORK OPERATING TYPE
S46
INSERT SET CN OPERATING TYPE INFORMATION AND INFORMATION RELATED TO CORE NETWORK RESPECTIVELY INTO SPECIFIC FIELDS OF SYSTEM CHANNEL MESSAGE
S47
SEND SYSTEM CHANNEL MESSAGE TO ASYNCHRONOUS TERMINAL OVER BCCH
S48
INTERFACE HYBRID TYPE ASYNCHRONOUS TERMINAL WITH CORE NETWORK
END

FIG. 12B


START
SELECT PLMN
S51
SELECT CELL
S55
RECEIVE SYSTEM INFORMATION MESSAGE OVER BCCH
S53
ANALYZE CN OPERATING TYPE INFORMATION
S54
S55
CN TYPE =GSM-MAP?
NO
YES
S60
CN TYPE =ANSI-41?
NO
YES
S56
ANALYZE INFORMATION ELEMENTS RELATED TO CORE NERWORK AS THOSE FOR GSM-MAP AND STORE PLMN IDENTITY
S61
ANALYZE INFORMATION ELEMENTS RELATED TO CORE NERWORK AS THOSE FOR ANSI-41 AND STORE SID, NID, MIN_P_REV AND P_REV
S57
SELECT CC AND MM FOR GSM-MAP AND SET PROTOCOL THERE BETWEEN
S62
SELECT CC AND MM FOR ANSI-41 AND SET PROTOCOL THERE BETWEEN
S58
INITIALIZATION BASED ON CONTENTS OF INFORMATION ELEMENTS RELATED TO CORE NETWORK
S63
INITIALIZE BASED ON CONTENTS OF INFORMATION ELEMENTS RELATED TO CORE NETWORK
S59
INTERFACE WITH GSM-MAP CORE NETWORK
S64
INTERFACE WITH ANSI-41 CORE NETWORK
END